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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/611,562	07/07/2000	Masahiro Kobayashi	JCLA6244	8123

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J C PATENTS, INC.
4 VENTURE, SUITE 250
IRVINE, CA 92618

EXAMINER

DUONG, THO V

ART UNIT PAPER NUMBER

3743

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/611,562	KOBAYASHI ET AL.	
	Examiner	Art Unit	
	Tho v Duong	3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input checked="" type="checkbox"/> Other: <u>Appendix B</u> . |

DETAILED ACTION

Receipt of applicant's amendment filed 10/4/2004 is acknowledged. Claims 6-11 are pending.

Response to Arguments

Applicant's arguments filed 10/4/2004 have been fully considered but they are not persuasive. Applicant's argument that Kang in whole disclosure never discusses the dimension relation between the slit width, the gap between the slits and the tube, has been very carefully considered but is not deemed to be persuasive because drawings is part of the prior art, which shows the geometrical relationship between the slit width, the gap between the slits and the tube. Kang may not discuss about the geometrical relationship but show in the drawings. For the second part of the applicant's argument, applicant is advised to see the rejections as follow:

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6-7 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claimed subject matter of "N = the number of slits or the number of heat transfer fins per fin unit" is not described in the original description.

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The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed subject matter of "N= the number of slits or the number of heat transfer fins per fin unit renders the scope of the claim indefinite. Slits and heat transfer fins are not art equivalent. Therefore, it is not clear whether applicant is claiming number of slits or a number of heat transfer fins.

Claims 6-11 are further rejected as can be best understood by the examiner in which N is number of slit arrays.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Kang et al. (US 5,755,281). Kang discloses (figures 9 and 10) a heat exchanger comprising a heat transfer coil (30) penetrating through a row of multiple plate-shape heat transfer fins (20); air (A) is supplied orthogonally to the heat transfer coil; the heat transfer fin is partitioned in at least one fin unit in which arrays of slits are arranged in a row. As regarding claim 1, the formula:

$W_s \geq (1 - 0.1(6-N))W_f/(2N+1)$, can be rearranged as

$W_s/W_f \geq (1 - 0.1(6-N))/(2N+1)$

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Kang discloses (figure 9) a partial view of a fin unit, which includes 12 slit arrays (including two slit arrays on the far edges of the figure). The number of slit arrays is clearly greater than 12 if the whole fin unit is shown. Therefore, N is greater than 12, for the purpose of calculation, N is equal to 12. After plugging the N value, the formula is further simplified as a ratio of

$W_s/W_f \geq 0.064$ (this number is smaller as the N value increases).

Basing on the geometrical relationship of figure 10A, the ratio between the width of the slit to the width of the fin is W_s/W_f is greater than 0.064. Therefore, the formula is anticipated by Kang. Also basing on the geometrical relationship of figure 10A, the ratio between the width of the slit (W_s) and spacing (W) between two slits to the diameter of the tube (ϕ) are the same, which is approximately 0.23. This ratio is within the claimed range 0.17-0.29 and 0.18-0.5 of the invention. With regarding applicant's argument that it is improper to use proportion of the elements in the drawing, has been very carefully considered but is not deemed to be persuasive. It has been stated in rule 37 CFR 1.84. (k) (3) of the MPEP that "Elements of the same view must be in proportion to each other, unless a difference in proportion is indispensable for the clarity of the view". Applicant is also advised to see case laws in re Mraz 173 USPQ and Vas-Cath Inc. V. Mahurkar 19 USPQ 2d for geometrical relationship. The examiner does not rely on actual dimension of the figure but only the geometrical relationship between the diameter of the tube D_i , W_s , W_f and W from the same view of figure 10A. The geometrical relationship of Figure 10A is shown in the Appendix B1, B2 and B3, attached herewith. In the appendix B1, B2 and B3, the present of a ruler is not to show the actual size of the drawings but only to help the applicant to visualize the geometrical relationship between the slit, spacing between slits, fin and

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tube because regardless of what scale, the ratio number is dimensionless. From appendix B1, W_f appears to have 34 intervals, from appendix B2, D_i appears to have 9.5 intervals, from appendix B3, $W_s=W$ and appears to have 2.2 intervals. The examiner uses the term “intervals” to emphasize the insignificance of scaling because the “interval” is canceled out when the ratio between two numbers is taken.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kang in view of Park et al. (US 5,975,199). Kang discloses substantially all of the claimed invention as discussed above except for the limitation that the tube has a diameter of about 7 mm. Park discloses (figure 1, column 3, lines 1-2, and column 4, line 66- column 5, line 4) a heat exchanger that has a coil (2) with a diameter of 7mm been used in industrial application for the purpose of adapting the tube to be used in an air conditioner. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Parker's teaching in Kang's heat exchanger for the purpose of adapting the tube to be use in an air conditioner. Regarding applicant's argument in the Remark, applicant argues that Park does not provide the motivation to modify the actual size in Kang if the drawing of Kang is considered as the actual size. This argument is not persuasive because reference to Kang is not relied on to show the

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actual size but only to show the geometrical relationship between the slits, spacing of slits, fin and tubes. Whether the actual size of Kang is modified or not, the geometrical relationship of Kang is maintained as the same. For example, if the width of slit and the spacing between the slits are designed to be the same, if the actual size of width of slit is changed from 1 mm to 2 mm, the spacing between the slits will also be changed from 1 mm to 2 mm.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tho v Duong
Examiner
Art Unit 3743



TD
December 23, 2004